



FLORA AND VEGETATION MANAGEMENT

Enrollment year	2019/2020
Academic year	2019/2020
Regulations	DM270
Academic discipline	BIO/03 (ENVIRONMENTAL AND APPLIED BOTANICS)
Department	DEPARTMENT OF EARTH AND ENVIRONMENTAL SCIENCES
Course	NATURAL SCIENCES
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	2nd semester (02/03/2020 - 12/06/2020)
ECTS	9
Lesson hours	92 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	ASSINI SILVIA PAOLA (titolare) - 4 ECTS BARCELLA MATTEO - 3 ECTS BRUSONI MAURA - 2 ECTS
Prerequisites	Basic knowledge of Systematic Botany, with particular reference to the genera of wood species (Fagus, Quercus, Populus, Salix, Prunus, Acer, Fraxinus, Ulmus, Tilia, Carpinus). Basic knowledge of Geobotany, with particular reference to biological forms, chorological types and the phytosociological method of studying vegetation.
Learning outcomes	The main objective of the teaching is to develop the ability to analyze the management problems of different habitats (and, therefore, of the annexed flora) and to develop possible solutions, based on the main normative and cognitive instruments in force at European level. The expected learning results are as follows: - Knowledge of the Habitat Directive (Directive 92/43 / EEC) and related technical aspects (Standard Forms, Habitats Monitoring Manual, Pressures and Threats, Conservation Measures).

- Knowledge of the European Red List of Habitats and the assessment criteria used to define the conservation status of the habitats.
- Knowledge of EU Regulation n. 1143/2012 of the European Parliament and of the Council with particular reference to risk assessment protocols of invasive alien plant species.
- Knowledge of the main techniques of habitat management and invasive alien species (such as grazing, cutting, mowing, fire, mechanical disturbance).
- Knowledge of the key elements of restoration ecology and of methods for restoring natural habitats (serial maquis, flowers, quarries).
- Ability to apply the acquired knowledge to recognize habitat management problems and develop strategies for their resolution.

Course contents

The course aims to provide students with concepts, methods and tools to manage flora and vegetation. Some notions of Geobotany are considered, useful for the understanding and discussion of management issues focused on three main goals: conservation, restoration and monitoring of flora and vegetation. Natural and semi-natural ecosystems (grasslands, shrublands, forests, wetlands, riparian zones), and agro-ecosystems are analyzed with their main problems (for example, invasive alien species, abandonment, overgrazing etc.) and management methods (for example, cutting, grazing, mechanical disturbance etc.). Particular attention is given to the alien species (discussing the prioritization processes, specifically designed to incorporate the requirements of EU Regulation no. 1143/2014 and preparatory to risk assessment) and to the Habitat Directive (including the linked management plans). Concrete case studies (addressed by the teacher and the structure in which it operates) are discussed in relation to Habitats particularly interesting for the Lombardy and northern Italian territory. The course includes excursions in lowland areas (Po and Ticino) or Apennine (northern) to recognize the Directive Habitats by means of guide species and discuss their monitoring and management.

Teaching methods

The course includes lectures, exercises and excursions. For the lectures, Power Point presentations are used, made available by the teacher at the end of the lesson. During a part of the exercises, the students are guided to the online search for useful data for the preparation of the report necessary to face the exam. Other exercises are instead carried out in the field (Botanical Garden, city of Pavia, near environments) to recognize useful species characterizing habitats or indicators of phenomena in progress (nitrophylous species, ruderalization, disturbance). During the excursions, the students are guided to the recognition and monitoring of habitats of Directive 92/43 / EEC, as well as to the evaluation of the management problems in place in these habitats. Attendance at exercises and excursions is strongly recommended.

Reccomended or required readings

- 1) Ausden M., 2007. Habitat Management for Conservation. Oxford University Press.
- 2) Blakesley D., Buckley P., 2016. Grassland Restoration and Management. PELAGIC PUBLISHING.
- 3) Cristea V., Gafta D., Pedrotti F., 2015. Fitosociologia. TEMI, Trento.

- 4) Van Andel J., Aronson J., 2012. Restoration Ecology. The New Frontier, second edition. Wiley-Blackwell.
- 5) Angelini P., Casella L., Grignetti A., Genovesi P. (ed.), 2016. Manuali per il monitoraggio di specie e habitat di interesse comunitario (Direttiva 92/43/CEE) in Italia: habitat. ISPRA, Serie Manuali e linee guida, 142/2016.
- 6) Redecker B., Finck P., Hardtle W., Riecken U., Schroder E., (eds.), 2002. Pasture Landscapes and Nature Conservation. Springer

Assessment methods

The learning is verified through an oral test, of about 25 minutes, during which the student will present a report on a habitat (of his choice among those of the Habitat Directive). In the report, aspects to develop are clearly indicated by the teacher during the lessons. They include: Habitat name in Italian, Habitat name in English, Habitat directive code, Biogeographical region/s it belongs to, Distribution in Italy, General description of the Habitat, Physiognomic reference combination, Phytosociological table of the habitat, Syntaxonomic framework, Possible presence of species of Annexes II, IV and V of the Directive, Dynamics and contacts, Area occupied in Italy in each biogeographical region, Overall conservation status in each biogeographical region, Trend, Conservation status according to the European Red List of Habitat, Pressures / threats / problems management, Possible management actions, Monitoring, Bibliography.

The learning assessment will then be completed through a presentation on the application of a EU IAS prioritization process.

Further information

Scientific articles and lecture notes related to the prioritization process and risk-assessment protocols will be available to the students.

Sustainable development goals - Agenda 2030

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